Dangerous Champions of IT Innovation

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Abstract

An IT innovation champion is a self-appointed advocate of a hardware, software or data innovation. A dangerous IT innovation champion can expose an IT innovation project, as well as one or more operational processes and the organization, to reputational, financial, and other risks. While most prior studies see champions as heroes who drive projects forward through advocacy and marshaling of resources, some prior studies reported that champions do not always succeed and some reported that ineffective or dysfunctional champions may cause harm. We answer calls for more research on dysfunctional or ineffective innovation champions, by reflecting on particularly dangerous high-level IT innovation champions revealed in three field-based case studies. Based on our study findings, we discuss how to spot dangerous champions in time to mitigate high project and business risks.

1. Introduction

Organizations vary in their readiness to utilize bleeding-edge emerging IT applications. Top management support is often seen as a panacea that helps ensure IT project success. However, some executives are high on enthusiasm but low on awareness of technical, organizational, inter-organizational and other risks. This paper considers problems that these high-level IT innovation champions (CEOs and CIOs) can cause, by promoting risky new IT applications or by allocating resources and attention to them, while giving insufficient focus to processes, procedures and controls that are needed to ensure that new or ongoing systems perform reliably.

After defining the concept of a dangerous champion, we present and discuss five examples from prior case research: a dangerous CEO-champion described in one classic teaching case [19] and a dangerous CIO-champion described in a classic teaching case [17]. Then we describe three dangerous IT innovations champions (two CIOs, one CIO) observed in our recent field-based studies.

1.1 Dangerous IT Innovation Champions

Dangerous IT innovation champions can be difficult to spot, since at first their behavior seems similar to effective IT champions who promote promising but risky new technologies [22]. Effective IT innovation champions promote new development methods, new software application, or use of new IT devices [1]. They are persuasive – often persistently so! They keep advocating for a particular IT platform, device, application or method, until resources are provided to implement it.

As is pointed out in a recent literature review [20] and in Section 2 (below), much prior champion research – including a stream of management studies that addressed champions of new product innovation and a stream of IS studies of IT innovation which focused on effective champions. Some prior studies cautioned that a champion could be ineffective or possibly over-zealous. Our research shows that while all champions articulate a persuasive vision about the focal innovation, some champions do not succeed in realizing value from it. An over-zealous champion can cause harm by diverting resources away from worthier projects, or by boldly entering innovation territory for which they lack appropriate knowledge and suitable oversight capabilities. These champions are dangerous because they do not know what they do not know, and thus expose the innovation project, neglected processes or projects, and the organization to unacceptably high risk, without initiating compensatory risk mitigation. They lack some knowledge and capabilities necessary to achieve the vision. If a champion does not recognize this knowledge deficit, they can make risky decisions or fail to mitigate important risks.

While most champions focus on a compelling long-range vision, some dangerous IT innovation champions focus so intently on that vision that they

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fail to attend to evidence close at hand, such as system-related problems that threaten day-to-day operations. Therefore, in several ways dangerous IT innovation champions threaten projects, operational processes, and even their organizations.

In Section 1 we describe dangerous IT innovation champions observed in two classic teaching cases. After reviewing the literatures of new-product champions and IT innovation champions in Section 2, we then describe three dangerous IT innovation champions encountered in our recent field-based case studies. We discuss our findings in light of a framework that juxtaposes a champion's *focus on innovation versus operational reliability*, against the champion's *relevant knowledge and expertise*.

Two widely-taught field-researched teaching cases -- *Fixing the Payment System at Alvalade* [19] and *CareGroup* [17] -- describe managers we classify as dangerous IT innovation champions. Each champion – a CEO and a CIO -- was highly persuasive about IT innovation, yet each exposed their organization to danger. These champions did not recognize that they lacked key capabilities and knowledge to ensure project success and operational and system reliability; we discuss them next.

1.2 An IT Innovation Fails on a Very Hot Day

The *Alvalade* case, set in Portugal in 2003, introduces a former professional soccer player who was the charismatic CEO of a catering company that won the contract to manage all food/beverage services in Lisbon's new state-of-the-art Alvalade Stadium [19]. Before first opening its doors, this champion announced that an innovative payment system (under development) would serve as the only way fans could purchase food and beverages at restaurants, bars, and cafeterias, and from "ambulantes" walking around the stadium. Payment cards would feature pictures and profiles of famous soccer players (combining a payment mechanism with a collectible memento). With great fanfare, before the stadium's inaugural soccer match (Sporting Club of Portugal versus Manchester United) a publicity campaign touted the payment system. Meanwhile, work on the stadium fell behind schedule (something the catering CEO had no influence over). Construction delays meant that full end-to-end testing of the new payment system was not conducted. The systems integrator was only able to conduct an incomplete test of the new system just days before the opening match, with no time to test the changes they made as a result of the test.

A mix of bad luck and technical and managerial missteps caused the system to fail spectacularly during the inaugural match, on an unseasonably hot day. Nearly everything that could go wrong, did. A rooftop antenna (controlling the wireless network necessary for ambulantes to accept card payments) overheated and failed. In the cafeteria, long lines formed. Angry fans nearly rioted, because the system slowed to a crawl. Cash registers did not include bottled water as an authorized product (with potentially fatal consequences for overheated fans) and there was no contingency plan specifying what to do about predictable problems like this which could have been anticipated. Luckily, the Portuguese team won the match and no riot or stampede occurred.

The catering company CEO should have shouldered some blame for the fiasco, since the case reveals that he exhibited five dangerous behaviors before the match: 1) He set unrealistic expectations by promoting the untested payment system. 2) The CEO failed to hire a lawyer experienced in software projects to review vendor proposals and the final contract; 3) He selected a local vendor that had only recently shifted from selling office equipment, to packaged software in its product line and (quite recently), to system integrator (this vendor had never delivered a project of this scope, and they installed the wrong version of SQL Server for the payment system). 4) The CEO approved a design that would relied entirely on the new payment card (no cash or credit card payments); 5) He did not direct his staff to develop contingency plans that could have spelled out clear triggers and workarounds for various system failure scenarios.

1.3 A Visionary's Near Vision is Out of Focus

The *CareGroup* case describes a Boston-based multi-hospital organization. Its CIO, John Halamka, MD, was (and still is) a persuasive advocate for new healthcare IT. Dr. Halamka is multi-talented: he started a software company while a college student majoring in computer science and economics, and subsequently simultaneously studied engineering and medicine. As CIO he oversaw an enterprise software project that represented a big step forward for CareGroup, which had grown by acquiring several other hospitals. He also oversaw an electronic health record project, an emergency department smart-board system, and other IT innovation projects. With great fanfare, he inserted an RFID chip in his arm to highlight its potential role in supporting a fully portable patient record. Currently, he writes and frequently speaks about blockchain applications for patient care and healthcare supply chains. This tireless IT innovation champion paints a compelling picture of a future where needed information will be

seamlessly available across all patient encounters, and in which all clinical and administrative processes will be optimally efficient and effective.

While Dr. Halamka has impressive software expertise and a remarkable ability to envision how radical technologies can transform health care, in 2002 (the time of the case), his knowledge of how to ensure a reliable operational backbone was incomplete, and he was not cognizant of IS governance and control best practices. This IT innovation champion was dangerous because his oversight of the people, tools, and capabilities for ensuring system reliability was weak. While he closely monitored new-technology projects, he did not put appropriate mechanisms and staffing in place to ensure 24/7 system reliability.

In 2002, *CareGroup* experienced a crisis when its primary network crashed. Providers, accustomed to 24/7 access to online medical records, lab results, and other applications, were forced to revert to ill-defined paper-based processes for nearly a week. The CIO heroically put in long hours, inspiring his medical and IT staff to also do so. Thankfully, no patients suffered serious harm during the network crisis. Still, this unfortunate episode was costly and revealed weak governance and oversight. Called before the Board of Directors to explain what happened and how he would ensure it would not happen again, Dr. Halamka presented the following lessons learned (paraphrased for brevity):

1. Keep network equipment up to date.
2. Never rely on a single source of expertise.
3. Keep IT knowledge up to date.
4. Control end-user experimentation.
5. Establish network change controls.
6. Recognize that mergers bring IT risks.
7. Don't say yes to every user request.
8. Keep contingency plans current.
9. Provide redundant access to critically-important information and data.
10. Life-cycle manage network components.

An applicant for the CIO job should know these ten lessons, which are basic knowledge requirements for the job. A CIO should anticipate adverse scenarios and prepare contingency plans that let employees know what to do when a network (or software or database) fails. The Board needed to consider whether to replace Dr. Halamka, hire a co-CIO who would focus on system reliability and security, or otherwise restructure the IT organization so that someone would be accountable for ensuring system reliability and another person held accountable for innovation.

Our analysis of the *Alvalade* and *CareGroup* cases (contributed by other field researchers) reveals that dangerous IT innovation champions can expose projects, processes, and their organizations to risk. Yet, while many empirical studies focused on effective champions, only a few studied ineffective champions (those who promoted innovations that failed or resulted in negative consequences). Few papers explain how or why dangerous champions expose their organizations to unacceptably high risks.

2. Innovation Champions: Prior Research

In this section we discuss two research streams: management studies of champions of new products based on innovative technologies (not necessarily IT) and IS studies of IT innovation champions.

2.1 New-Product Champion Studies

Champions in Donald Schon's classic 1963 study were well-trained engineers who successfully promoted radical technological innovation for new products. Schon stated that each champion "actively and vigorously [promotes his idea, despite initial] sharp resistance … Many display persistence and courage of heroic quality … a few become martyrs to the championed idea." [21], (p. 84). Following Schon, many subsequent studies focused on successful innovation champions. For example, a 1980 paper offered evidence that the champion role evolves in step with an organization's evolution (e.g., from small startup to single-product line integrated enterprise, to diversified firm) and that champions can emerge from many levels of the hierarchy, from middle-managers on a technical or non-technical career ladder, to the executive level [15]. However, a 1986 paper concluded that champions are "neither as widespread, unambiguous, nor as unabashedly desirable as the popular literature on innovation would have us believe." That paper called for research addressing such questions as: "What are the effects of championing an unsuccessful product? … [and] Can there be too much championing?" [7].

A 2001 study reported that champions were equally likely to advocate for innovations that ultimately succeed as for innovations that fail; that paper called for studies examining "methods for holding champions accountable for their actions" [16]. A 2005 paper warned: "Senior managers may be swept away by champions' passion and conviction and potentially ignore danger signs that the project is failing." [11] (p. 660). Another paper warned that innovation champions in the R&D group are "on the

horns of a tricky dilemma. They must not only determine how to best initiate and champion risky projects destined for high failure rates, but also put in place mechanisms for terminating them in a timely manner" [13] (p. 1455). Executive champions sometimes support highly risky projects that fail or do not live up to expectations [8], [12].

Thus, some early champion studies in the management literature extended Schon's exploration of *effective* champions, and other papers called for studies examining *ineffective* or *over-zealous champions*. A complete review of these studies is beyond the scope and page constraints of this paper. However, a 2015 paper [13] contends that some high-level innovation champions engage in dangerous *escalation of commitment* to a failing project [3]: "Dysfunctional executive advocacy increases the chances that 'weak' project decisions are made at the initiation phase [and will] negatively influence [project] termination decisions … [after failing to use] best-practice project management and [project] termination decision processes and practices."

2.2 IT Innovation Champion Studies

In parallel with the management stream on innovation champions, IS scholars also conducted champion studies, as far back as a 1983 study of decision support systems (DSS) champions [5]. A 1990 study that compared 25 champions of successful IT innovation projects with 25 peer non-champions (similarly-knowledgeable employees who worked on the same projects but whose peers did not see them as champions) reported that champions exhibited more "transformational leader" behaviors and used more varied influence tactics. These IT innovation champions linked advocacy of the innovation to "larger principles or unassailable values," and they provided "emotional meaning and energy to the idea," which helped build commitment to it [10]. Yet, that paper cautioned that attempts to formalize the champion role could backfire, by undermining the champion's "intrinsic motivation and commitment [which could] jeopardize the innovation's ultimate success" [10]. In 1991, Beath [1] observed that IT champion behavior is an *emergent process* that cannot be effectively mandated. She reported that successful mid-level or executive IT champions appreciated three forms of organizational support: relevant *information* (helps them evaluate an IT innovation and persuade others of its merits), assistance from high-quality IT staff with needed *expertise*, and *political support*. About half of the champions in that study worked with the CIO to further their aims, while other champions worked independently of the CIO. Beath saw the "zealous champion" as potentially problematic: "IT champions usually want IS managers to … postpone other projects in favor of theirs. … The problem IS managers confront is how to manage the constant realignment of goal sets perturbed by a zealous champion" [1] (p. 367). Thus, within the IS community Beath raised the question of potentially dysfunctional champions who could cause harm to their organization's IT architecture.

In 2004, Swanson and Ramiller [22] contended that some leaders (and/or their organizations) are not sufficiently mindful when it comes to IT innovation; they saw *mindfulness* [23], [24], [6] as an antidote to harmful champion faddishness: "Mindfulness … may entail wariness …, and where needed it may foster a resistance to jumping on innovation bandwagons … Innovating mindfully may actually mean that a firm forestalls or foreswears a new initiative, as facts and conditions relevant to the local organizational context dictate" [22] (p. 559). In this view of IT innovation, a mindful organization "attends to an innovation with reasoning grounded in its own organizational facts and specifics. [This supports] sound judgements about whether adopting a particular innovation is a good thing to do, [and] when … and how implementation and assimilation can be best pursued. … Context matters in rendering such judgments" [22] (p. 554). The mindful organization is wary of failure and its leaders see near-miss incidents (like the CareGroup network outage – a near-miss because no patient suffered severe harm) as signals of possible failure to come. In contrast, a "mindless" organization is susceptible to fads: "When a bandwagon develops around an IT innovation, the mindless firm may join it … impressed by success stories that appear to validate the innovation as a good, maybe even irresistible idea." [22] (p. 554). Swanson and Ramiller warned against conflating innovativeness and mindfulness: "The manager who indiscriminately puts into play all kinds of new IT … [does] little to foster organizational mindfulness" [22] (p. 559). They called for studies to closely examine mindful/mindless champion behavior.

Leaders walk a fine line between being mindful and cautionary, versus being innovation enthusiasts. A 2007 study reported that charismatic/inspirational champion leadership (optimism, enthusiasm, vision, confidence) and idealized influence (pride, purpose, altruism, respect, morality, collectivity) contribute to IT innovation project success [18]. A 2008 study of high-level IT innovation champions contended that top management support "is not simply one of many CSFs (critical success factors) needed for project success; [it] is the most important CSF," and that

"project managers cannot hold primary responsibility for the realization of benefits because they tend to leave a project after [its completion]… and before the benefits are realized" [25] (p. 722). These IS studies further affirm that a CEO or CIO can be an effective IT innovation champion.

A review of 22 IT champion studies introduced the term "dangerous champion" and called for research on this topic (which answers earlier calls for studies that challenge the idea that a champion is by definition effective): "Many studies investigated champions' competencies and identities, relationships and influence tactics, and roles and activities … yet it is a rarely-disputed claim that champions have a positive impact. We contend that dangerous champions exhibit both effective and ineffective champion behavior. Yet, few studies investigated "champions' negative impacts [or] … champions … driving IS innovations in the wrong direction" [20]. To address this and other calls for further study of ineffective, dysfunctional or dangerous champions, we start with the premise (per [20]) that dangerous champions exhibit behaviors similar to effective champions: they articulate a persuasive case for the risky new technology and persuade influential decision makers to move forward with one or more projects. Our study addresses two research questions:

- RQ1: What behavior and capabilities distinguish dangerous IT innovation champions, compared with effective IT innovation champions?
- RQ2: Can dangerous IT innovation champion behavior be spotted in time to mitigate innovation risks?

3. Research Method

In Section 1 we discussed dangerous IT innovation champions we identified in classic field-researched teaching cases developed by other scholars. Here, we provide an overview of three studies we conducted between 2017 and 2019. Each study was designed to investigate a broader set of questions related to IT innovation, and that included interviews with high-level IT innovation champions:

- Case Study 1 (Blockchain and a Dangerous CEO): Several small interconnected healthcare-related organizations (two non-profits and two for-profit organizations) collaborate to design blockchain solutions to two interrelated challenges: Dangerous medication waste and underserved needy patients.
- Case Study 2 (AI and a Dangerous CEO): A medium-sized physician group collaborates with a software vendor to design a new system that will, for the first time, apply two forms of artificial intelligence to a set of mission-critical tasks.
- Mixed-Methods Study 3 (A Dangerously Agile CIO): At a large financial services company, a CIO-champion attempts to manage a complex portfolio of IT projects by adopting various agile development innovations.

In all of the case studies, the champion and one or more subordinates and other stakeholders were interviewed. Company archival documents as well as public accounts of company activities were included in the case study database.

From data thus gathered in these three studies, we identified three dangerous high-level IT innovation champions: two CEOs and one CIO. Similar to effective champions described in prior studies, these executives advocated persuasively for their chosen innovations, and obtained or allocated supportive resources. Yet, they exposed their organizations to high risks, by failing to recognize needed knowledge and capabilities or failing to attend to signals that pointed to vulnerabilities that jeopardized system and operational reliability. We describe these cases next.

4. Recent Cases

4.1 Blockchain and a Dangerous CEO

A pharmacist in a poor community serves patients who struggle to afford their medications – especially expensive cancer or HIV drugs. When some patients died before taking all of their expensive unexpired medications, their grieving relatives approached him, hoping to donate the drugs to other patients. However, in this U.S. state (and many others) it was not legal for pharmacies to accept donations of unused, unexpired drugs (some states allowed redistribution of drugs donated by institutions, such as hospitals or nursing homes, but not individuals). The pharmacist became an ardent champion for political and social change, and later, IT innovation.

He first set up a charity pharmacy to dispense institutionally-donated drugs to needy customers -- at no charge to his neediest customers and at low prices to others. His team implemented a batch system for refilling drugs used for treating chronic conditions: once these drugs were dispensed in once-per-quarter batches, operational costs dropped. By 2019 the pharmacy was nearly able to sustain itself without grant support. The social entrepreneur next lobbied for passage of a new law in his state; now individuals are permitted to donate unused medications to

authorized charitable pharmacies, so this charity pharmacy can receive expensive unused drugs from individuals and dispense them to needy patients. Hoping to scale up, the pharmacist/CEO attended healthcare-related conferences to learn about best practices in medication redistribution. Afterreading about the use of blockchain in supply chains, he became convinced that a blockchain could maintain an irrefutable chain of custody so recycled drugs would not fall into illegitimate hands. He next assembled a team to design and test a solution to safely, securely and efficiently receive expensive drugs from institutional and individual donors, and deliver them to patients. Since then, he founded several organizations, each tackling an aspect of the medication waste problem.

This champion now speaks at conferences about his vision of blockchain as an enabling innovation for tackling the medication waste problem while helping needy patients. He has had no formal IT training, yet espouses a "fail-forward" incremental development philosophy [2] (create and test a rough prototype, get customer feedback on it, modify it in response to the feedback, and so on until a design emerges that shows strong customer acceptance). Meanwhile, he does not fully appreciate the financial and project risks his several organizations face. None of the four organizations he founded is self-sustainable; all are in danger of backsliding if he does not closely monitor operational details. Each organization is small but growing, which creates risky instability. Each venture needs financial backing to bridge to a state where revenues reliably exceed costs.

Regarding IT project risks: according to Gartner, blockchain applications in healthcare in general, and particularly in logistics/transportation and supply chains, have not reached the Peak of Inflated Expectations. These applications are "embryonic" – at least ten years from widespread acceptance and use [9]. Gartner does predict the blockchain solutions market will grow to $3 trillion, but not before 2030 [4]. So, any blockchain project aiming to solve the medication waste problem is risky. In a small organization, such risk can be dangerous.

This CEO might not yet fully appreciate the implications of an immutable blockchain. The "fail-forward" approach does work well in some component-based software development contexts. However, a blockchain prototype does not evolve into a strong application. Changes to a blockchain produce a cumbersome, opaque, and unmanageable design. Instead of failing forward by retaining some workable code and building on it, each blockchain prototype must be discarded; the development team starts fresh with the next version (and the next and the next) until they can commit to a design they expect will not change. This is analogous to creating several minimally viable products (MVPs) out of inexpensive materials; each physical prototype is evaluated and discarded until the designers are ready to commit to a buildable version.

Thus, the medication redistribution blockchain project is risky, and (unfortunately) this CEO-champion does not fully recognize many of the risks.

4.2 AI and a Dangerous CEO

The CEO of a US-based physician group led his organization since its founding with ten physicians more than 20 years ago. Today it provides administrative services to more than 500 providers. In 2017 the CEO sought a solution to the company's medical coding compliance problem. Medical coding is complex, knowledge-intensive, and critically-important for claims billing.

When a physician (or other healthcare provider) sees a patient, they document the encounter by dictating notes for professional transcription by a third party, or by entering notes into template-based software that integrates with an electronic medical record. Newer approaches to documentation are gaining ground, including speech recognition software that captures a doctor's comments for automatic transcription (in 2019, speech recognition software is used extensively by professional transcriptionists, and to a much lower extent by physicians). Medical coding needs to correctly align with this documentation. Codes provide a structured description of the encounter, the patient's condition and/or diagnosis, and procedures the provider used to treat them. Various medical codes (including so-called *evaluation-and-management* CPT codes[1], which were the focus of the innovation described in this case) must align with the provider's documentation in the patient's medical record; otherwise, a third-party payer (whether private or public insurer) might refuse a claim (or subsequently demand some of their money back). In 2015, ICD-10, an internationally-supported diagnostic code set, replaced a far smaller ICD set. This greatly increased the complexity of aligning ICD codes with documentation and with CPT codes. It created challenges for providers seeking to be paid correctly and to avoid costly penalties or reputational harm. In this knowledge-intensive domain of medical coding, experts predict artificial intelligence (AI) will someday shoulder much of the code-selection burden. However, much work needs to be undertaken before

[1] "CPT" sounds for Current Procedure Terminology.

AI solutions are available for all forms of coding in all medical specialties.

Since this physician group has grown to its current size of 500 providers, and since it operates at a profit, we assume its CEO is a generally competent manager and leader. He has not received formal IT training, but he is quite enthusiastic about IT innovations. When an acquaintance mentioned their company's work on an AI solution for one form of coding, the CEO was eager to adopt it. If his friend's software solution worked, it would dramatically reduce the firm's cost of verifying that providers entered appropriate billing codes, which would reduce the likelihood of recoupment demands or penalties (such as those imposed by Medicare). He hoped that eventually his friend's company could offer software that would fully automate the medical coding process; this would free up providers' time to help them provide attentive patient care.

This champion is dangerous. He overlooks the risk in the fact that this will be the *first-ever* application of natural language interpretation and machine learning in the *evaluation-and-management* CPT medical coding domain. In signing the contract, he saw tremendous long-term upside potential but failed to recognize a high financial risk: the physician group was required to pay the software vendor for each examined claim, even though the group would give the vendor a massive amount of their claims data (a very large data set is essential to effective machine learning in this domain). He did not recognize the contract transferred great financial risk to his firm, while minimizing the vendor's costs (the vendor would receive the claims data free of charge). Several project risks were also high. No one in the physician group IS organization had AI expertise, adding to the already-high technical risk (it would be difficult for them to evaluate the vendor's work). Even the vendor's technical expertise risk was at least moderately high (since this is to be a first-of-its kind solution). Some organizational risks also threatened the project. The group had never before collaborated on a project like this (they had successfully implemented some packaged software, but this project would present far greater technical complexity). Our case study learned that the software vendor did not display strong cross-organizational expertise (although it apparently did have a good track record of managing its own projects).

Before the scheduled project launch, a newly-hired middle manager met with the CEO to explain why the planned project would be very risky. Worried the meeting might not go well, this whistleblower updated their resume. Fortunately, the CEO responded constructively to this intervention. Acting on their advice, the CEO insisted that the contract needed to be re-negotiated to protect the group's interests. The vendor agreed not to charge the group for its claims reviews, and the CEO agreed to freely provide the large quantity of claims data the vendor needed for the machine learning. At the whistleblower's suggestion, the CEO also approved several parallel coding quality projects that would focus on organizational issues (such as by working closely with those providers poor coding quality records). These projects ensured that if the machine learning project took a long time to generate value, the company should nevertheless improve its claims coding quality and (hopefully) avoid costly penalties.

This is a near-miss situation; this dangerous IT innovation champion would have put both the project and his organization at great risk. Post-intervention, the collaboration has moved forward on dramatically different terms: a new contract states that until the AI software consistently demonstrates 95% accuracy, the physician group owes no money to the vendor. The newcomer, who now oversees the project, has put in place several mechanisms to mitigate other project risks (in recognition of the group's technical expertise shortcomings, potential communication problems, and other risks). The whistleblower also is in the process of developing contingency plans to handle problems should they nevertheless arise during the machine learning project.

4.3 A Dangerously Agile CIO

In 2012 the new CIO of a large multi-national systems development organization embarked on a "digital transformation" of its technology division, which employed more than 20,000 staff in eight U.S. cities and in Australia, China, India, Ireland, and the U.K. The CIO aimed to improve productivity and increase and enable all aspects of workforce diversity – from improving gender balance across the organization, to enabling remote working, flexible hours and implementing a 'bring your own device' that would free staff from fixed technologies and strict technology supplier contracts.

The first sign that this CIO was a dangerous champion was revealed in an evaluation exercise to choose which large-scale agile method would be used. The evaluation pointed to many significant downsides of the Scaled Agile Framework (SaFe) – one of the most concerning being the view that SaFe is not suited to a heavily regulated industry with strict compliance requirements. The evaluation also revealed that the existing method (put in place before the CIO's appointment) was "a clear winner both in terms of track record and suitability." Nevertheless,

the CIO chose SaFe. He was certain it would improve productivity, and he felt "a fresh start was needed" and that staff needed a "new label to grab on to."

The SaFe choice was problematic, since more than 65% of the firm's clients were heavily-regulated medical organizations, subject to various compliance requirements. In the first six months since SaFe adoption, most metrics deteriorated, including defects, time-to-delivery, sprint rhythm, and staff retention. After 12 months, a senior executive reported that some metrics showed improvement and no metric had deteriorated further. She reported "growing confidence" among some (not all) key staff. However, by then 14% of the company's clients had left, due to compliance concerns.

In June 2013, confronting a problematic year-end report, the CIO decided to introduce a new agile development variant that was used effectively by Spotify. All staff were re-trained for new roles, and new seating arrangements were put in place. Again, performance metrics declined. Some developers, feeling "burned" by the SaFe initiative, did not change their practices. Some overtly refused to change, and others covertly did "what we always do … while calling it whatever the CIO wants to hear". Many employees stated that cynicism, frustration and tension built in 2013 and 2014. One developer called it "the single biggest culture change in the 22 years I've been here."

In 2015 the CIO, believing that no publicly-available agile method would fit his company's needs, moved to a newly developed in-house method. Yet, the same issues that plagued the other methods continued to exist. One cynical study participant stated the CIO "believes everything can be changed by a label. If this method doesn't work, get a new one. If that doesn't work, change again. [The CIO thinks] it is the people that are wrong and that a new method will fix them."

Next, the CIO declared that AI, which could identify better patterns and rhythms of work, would fix the issues the development effort had experienced in the past six years. All staff underwent AI training, and by 2019 they were required to demonstrate their use of AI and machine learning in their work. Yet, recently the CIO stated that available AI tools were falling short of what his team needed.

5. Discussion and Conclusions

Prior research contributed to an understanding of effective IT innovation champions: they spot a high-potential emerging artifact; articulate a persuasive case/vision of the value this can bring; embody the necessary leadership characteristics to inspire others; and draw on IT-specific capabilities to derive value form the innovation. We observed that many prior empirical studies focused on effective champions and did not provide substantial evidence about ineffective or dangerous champions (several papers did call for further study of ineffective or dangerous champions). Our contribution was to identify dangerous IT innovation champions in field-based case studies and juxtapose their key behaviors and characteristics with those of ideally-effective IT innovation champion.

Like all champions, dangerous champions state a persuasive vision; however dangerous champions put their organizations at unacceptably high risk. Sometimes (not always) the risk is realized – the champion fails to derive value from the promising IT innovation they promoted, or their actions cause financial or reputational harm. They are dangerous because of gaps in their knowledge and capabilities, and/or because of their attentional focus. Because they lack knowledge of IT risks and controls, they fail to identify and mitigate relevant project risks or operational risks. Because they focus on a compelling future vision driven by investments in innovative technologies, they fail to notice operational issues close at hand. Thus, our field research indicates that effective and dangerous IT champions can be usefully described along these two dimensions of attention and knowledge/capabilities (Fig. 1).

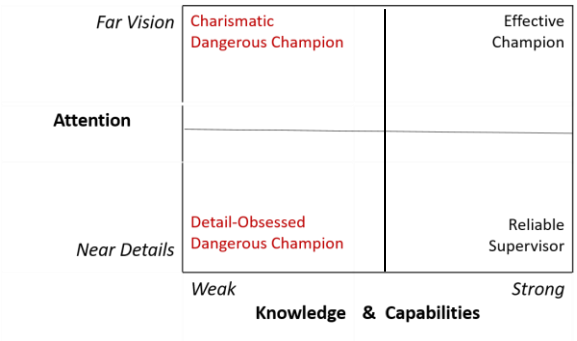

Figure 1, IT Innovation Champions

Similar to the catering company CEO in the *Alvalade* case (described in Section 1), the two CEOs presented in Section 3 are technology enthusiasts who lack high-level technology-management skills. Like the CEO from the class case, these two CEO champions successfully persuaded others to share their vision – so much so that they created dangerously unrealistic expectations about the likelihood that the innovation will be implemented successfully. Because their vision was oriented to future benefits, and because they were unaware of their knowledge and capability gaps, they failed to

attend to risks that could delay or derail the project. Our two dangerous IT innovation champions might not recognize the harm that can befall their organization's finances and reputation, if the implemented innovation does not work correctly.

In case 4.1 the enthusiastic pharmacist/social entrepreneur/CEO is moving forward with many projects at a rapid pace, with little or no consideration of mounting business and project risks. His aim is laudatory, yet his ability to execute on his vision is questionable. He does not have a demonstrable track record of building entrepreneurial ventures (moving from vulnerable startup to long-term sustainability). Although he has articulated a persuasive vision for the use of blockchain to support a medication reuse operation, he has not installed processes and controls in place to ensure that patients will be protected from harm; and he has also not ensured that his several IT innovation ventures can survive if their projects are delayed or their systems are flawed.

In Case 4.2 a middle manager's timely (and brave) intervention focuses the CEO's attention on business and project risks, and convinces him to renegotiate the contract with the vendor and allocate some resources to other projects that can help ensure their coding compliance issues are dealt with in the event that the innovative use of natural language interpretation software and machine learning encounters some obstacles. We hope they will now successfully collaborate with the software vendor. It is too early to predict whether this risky AI project will succeed, but the newcomer's intervention reduced the physician group's risk considerably.

In Case 4.3 the CIO touts the latest and greatest "flavors" of agile development. Unlike the *CareGroup* CIO, he has not experienced a dramatic crisis. Like a lobster in a pot, he might not recognize how hot the water is getting, until it's too late. Both CIOs touted the benefits of IT innovations, and both CIOs failed to notice operational evidence of trouble brewing. Neither of these two CIOs recognized how and why procedures, processes, and controls help prevent trouble, even though textbooks indicate a CIO should oversee these.

All three dangerous IT innovation champions in our recent studies fit in the upper left quadrant of Figure 1 (Charismatic Dangerous IT Innovation Champions). Gaps in their knowledge/ capability sets left their organizations vulnerable to high project risks (because the champions did not institute or require specific mechanisms for mitigating technical risks, organizational risks, interdependence risks, and other project risks). These executives are unlikely to notice signals that the IT innovation project team is making poor technical decisions, communicating poorly with other stakeholders, ignoring threats to information quality, and so on.

The bottom half of the grid depicts two other scenarios. In the lower left quadrant, the hypothetical IT innovation champion at first articulates a persuasive vision (by definition) but subsequently fails to see the forest for the trees. This micro-manager has trouble delegating operational work (and might not recognize their own knowledge/ capability gaps), and will likely alienate project team members, who need inspiration to continue when they encounter occasional technical challenges. An effective leader relies on a well-designed executive dashboard to monitor key metrics, and otherwise focuses on supporting the development team.

In the bottom right quadrant is a leader who effectively attends to relevant operational details (because they have the IT knowledge/capability set to distinguish between relevant and irrelevant details). This IT Innovation Champion initially articulated a persuasive vision for the innovation (by definition), yet over time their attention increasingly focused on the details. Their strong IT knowledge makes them better suited to the role of reliable supervisor, who is likely to spot problems early and help fix them. This person will likely insist on a disciplined/ systematic approach to ensuring system reliability.

In the upper right quadrant is the ideal Effective IT Innovation Champion. Some of these champions combine the strong vision with strong IT knowledge and capabilities. Others recognize the gaps in their IT knowledge and capabilities, and know when to rely on people who have the requisite knowledge. When this champion is supported by a Reliable Supervisor (lower right quadrant), their capabilities are complementary: the champion sees the big picture, inspires the team, and marshals necessary resources, while the Reliable Supervisor attends to necessary details, spots problems, and helps fix them before they become bigger problems.

Based on these findings, we offer five propositions about IT innovation champions:

Proposition 1: As an IT innovation champion, an effective and mindful CIO attends to a long-term, strategic vision of value-from-IT-innovation, and monitors and provides useful resources and other forms of support to IT innovation projects.

Proposition 2: A second-in-command Reliable Supervisor can complement the CIO's long-term vision by closely attending to ongoing operational risks and closely monitoring the innovation project.

Proposition 3: In order to develop the knowledge to work effectively with a second-in-command, it is helpful if the CIO previously worked in the Reliable

Supervisor role, before transitioning to IT innovation champion and leader.

Proposition 4: As an IT innovation champion, an effective and mindful CEO recognizes his/her IT-related knowledge and capability gaps, and verifies that the CIO (or office of the CIO) demonstrate strong knowledge and capabilities related to both IT innovation and operational reliability.

Proposition 5: To support IT innovation, a mindful Board of Directors recognizes the dual requirements (and challenges) of articulating a contextually-relevant strategic IT innovation value proposition and ensuring consistently reliable IT-enabled operations.

Our arguments and case study findings begin to answer calls for studies of dangerous champions (high-level champions such as those discussed in this paper, as well as IT innovation champions who emerge from the middle ranks of the organizational hierarchy). We hope others will join us in conducting further in-depth qualitative and quantitative studies to test, refine, and debate our propositions about how and why dangerous IT innovation champions expose their organizations to high risks, and how the Board of Directors and other leaders can spot dangerous champions sufficiently early to take steps to mitigate project risks and operational risks that can bring financial and reputational harm to the organization.

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